Amendments to the Claims

Please cancel claims 5, 15, 16, 34 and 35 without prejudice.

Please amend claims 10, 11, 21-23, and 37 as provided below.

Please add new claims 38 and 39 as presented below.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled)

2. (Previously Presented) A nucleic acid molecule which is

(a) a nucleic acid molecule encoding the polypeptide having the amino acid sequence of SEQ ID NO: 7, wherein the leucine residue at position 513 of SEQ ID NO: 7 is replaced by an aromatic amino acid; or

(b) a nucleic acid molecule having the DNA sequence of SEQ ID NO: 17, wherein the codon represented by nnn corresponds to a codon coding for an aromatic amino acid,

wherein the nucleic acid molecule functions as a non-desensitizing AMPA-receptor or as a non-desensitizing subunit thereof.

Claims 3-5 (Canceled)

6. (Previously Presented) The nucleic acid molecule of claim 2 which is DNA, RNA or PNA.

7. (Previously Presented) The nucleic acid molecule of claim 2 encoding a fusion protein.

8. (Previously Presented) A vector comprising the nucleic acid molecule of claim 2.

9. (Previously Presented) A vector of claim 8 which is an expression vector, a gene targeting vector or a gene transfer vector.

10. (Currently Amended) An isolated host cell transformed with a vector of claim 8 or comprising the nucleic acid of claim 2.

11. (Currently Amended) The host cell of claim 10 which is a mammalian cell, an amphibian cell, an insect cell, a fungal cell, a plant cell or a bacterial cell.

12. (Original) The host of claim 11, wherein said mammalian cell is a HEK cell.

13. (Original) The host of claim 11, wherein said amphibian cell is an oocyte.

14. (Original) The host of claim 13, wherein said oocyte is a frog oocyte.

15. (Canceled)

16. (Canceled)

17. (Previously Presented) A method for producing a polypeptide encoded by a nucleic acid molecule of claim 2 comprising culturing a host transformed with a vector containing a nucleic acid molecule of claim 2 and isolating the produced polypeptide.

18. (Withdrawn) A polypeptide encoded by the nucleic acid molecule of claim 2.

19. (Withdrawn) An antibody specifically directed to the polypeptide of claim 18, wherein said antibody specifically reacts with an epitope comprising the aromatic amino acid which replaces the leucine at position 513 of the wildtype human AMPA-receptor $GluR3_{flip}$.

20. (Withdrawn) The antibody of claim 19 which is a monoclonal antibody.

21. (Currently Amended) A composition comprising a nucleic acid molecule of claim 2, a vector of claim 8, or a polypeptide of claim 18~~ or an antibody of claim 19~~.

22. (Currently Amended) The composition of claim 21 ~~which is a pharmaceutical composition~~, further comprising one or more of a pharmaceutically acceptable carrier, a diluent or excipient.

23. (Currently Amended) The composition of claim 21, ~~which is a diagnostic composition, optionally~~ further comprising suitable means for detection.

24. (Withdrawn) A method for the blocking of desensitation of glutamate receptor of the AMPA-type, comprising the step of replacing a leucine corresponding to position 513 of the wildtype human AMPA-receptor $GluR3_{flip}$ with an aromatic amino acid.

25. (Withdrawn) A method of identifying molecules which are capable of interacting with glutamate receptors of the AMPA-type, comprising the steps of:

(a) contacting a non-desensitizing AMPA-receptor as encoded by a nucleic acid molecule of claim 1, a vector of claim 8, a host of claim 10, or an antibody of claim 19 with said molecule; and

(b) identifying among these molecules the molecules which are capable of interacting with said glutamate receptors of the AMPA-type.

26. (Withdrawn) A method for the characterization of molecules which are capable of interaction with glutamate receptors of the AMPA-type, comprising the steps of

(a) contacting a non-desensitizing AMPA-receptor as defined in claim 1, a vector of claim 8, a host of claim 10, or an antibody of claim 19 with said molecules; and

(b) measuring and/or detecting the characteristic effect said molecules evoke.

27. (Withdrawn) A method of screening for molecules which are capable of interacting with glutamate receptors of the AMPA-type, comprising the steps of

(a) contacting a non-desensitizing AMPA-receptor as encoded by a nucleic acid molecule of claim 1, a vector of claim 8 or a host of claim 10 with a candidate molecule; and

(b). measuring and/or detecting a response; and

(c) comparing said response to a standard response as measured in the absence of said candidate molecule.

28. (Withdrawn) A method for the production of a pharmaceutical composition comprising the steps of the method of claim 25 and comprising a further step, wherein a derivative of said identified, characterized and/or screened molecule is generated.

29. (Withdrawn) A method for the production of a pharmaceutical composition comprising the steps of the method of claim 25 and formulating the molecules identified, characterized, screened and/or derivatized in pharmaceutically acceptable form.

30. (Withdrawn) The method of claim 25, wherein said molecule(s) comprise(s) (a) neuroprotective and/or (a) nootropic molecule(s).

31. (Withdrawn) The method of claim 25, wherein said molecule(s) comprise(s) antagonist(s), partial antagonist(s), partial agonist(s) and/or agonist(s) for glutamate receptors.

32. (Withdrawn) A method of using a non-desensitizing AMPA-receptor as a biosensor for glutamate concentrations comprising contacting a non-desensitizing AMPA-receptor as encoded by the nucleic acid molecule of claim 1 or a host of claim 10 with a saturating agonist, thereafter contacting the receptor with a sample and detecting a current produced by binding of glutamate to the receptor as compared to the current of the receptor prior to the contacting with the sample.

33. (Withdrawn) A method for the characterization of molecules that are capable of interaction with glutamate receptors of the AMPA-type comprising contacting a non-desensitizing AMPA-receptor as encoded by the nucleic acid molecule of claim 1 or a host of claim 10 with molecules suspected of being capable of interaction with glutamate receptors of the AMPA-type and detecting expression of the receptor in the presence of the molecule as compared to expression of the receptor in the absence of the molecule, thereby characterizing molecules that are capable of interaction with glutamate receptors of the AMP-type.

Claims 34-36 (Canceled)

37. (Currently Amended) A kit comprising the nucleic acid molecule of claim 2, the vector of claim 8, ~~the host cell of claim 11,~~ or the polypeptide of claim 18~~, the antibody of claim 19 or the molecule as identified, characterized or screened in claim 25~~.

38. (New) A nucleic acid molecule encoding an AMPA type glutamate receptor subunit that functions as a non-desensitizing AMPA-receptor subunit, wherein a leucine corresponding to the leucine at position 497 of SEQ ID NO: 1 is replaced by an aromatic amino acid in the amino acid sequence of the subunit.

39. (New) The nucleic acid molecule of claim 38 which is

(a) a nucleic acid molecule comprising a nucleotide sequence encoding a polypeptide having the amino acid sequence of SEQ ID NO: 1, SEQ ID NO: 2, SEQ ID NO: 3, SEQ ID NO: 4, SEQ ID NO: 5, SEQ ID NO: 6, SEQ ID NO: 7, SEQ ID NO: 8, SEQ ID NO: 9, or SEQ ID NO: 10, wherein the leucine residue corresponding to position 497 of SEQ ID NO: 1, 5 or 9, position 504 of SEQ ID NO: 2, 6 or 10, position 507 of SEQ ID NO: 3, position 505 of SEQ ID NO: 4 or 8, or position 513 of SEQ ID NO: 7 is replaced by an aromatic amino acid; or

(b) a nucleic acid molecule comprising a nucleic acid molecule having the nucleotide sequence of SEQ ID NO: 11, SEQ ID NO: 12, SEQ ID NO: 13, SEQ ID NO: 14, SEQ ID NO: 15, SEQ ID NO: 16, SEQ ID NO: 17, SEQ ID NO: 18, SEQ ID NO: 19, or SEQ ID NO: 20, wherein the codon represented by nnn is a codon encoding an aromatic amino acid.